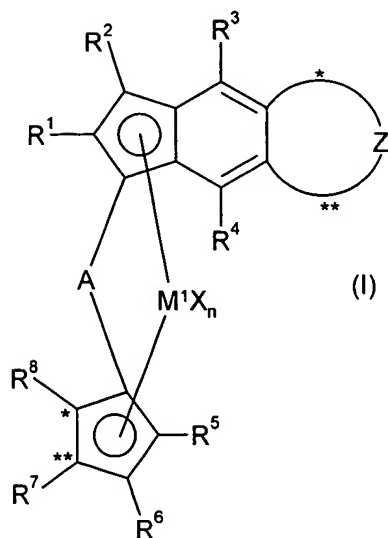


AMENDMENTS TO THE CLAIMS

1. (currently amended) An organometallic transition metal compound of the formula (I):



where

M^1 is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides,

the radicals X are identical or different and are each an organic or inorganic radical, with two radicals X also being able to be joined to one another;

n is a natural number from 1 to 4;

Z is a divalent organic group which has from 1 to 40 carbon atoms and together with the two carbon atoms of the indenyl system forms a saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 4 to 12 atoms, where Z within the ring system fused to the indenyl system ~~may also contain one or more, identical or different heteroatoms~~ optionally contains at least one heteroatom, identical or different, selected from the group consisting of Si, Ge, N, P, O, S, Se and Te;

R^1 is hydrogen or an organic radical having from 1 to 40 carbon atoms;
 R^2 is hydrogen; ~~or an organic radical having from 1 to 40 carbon atoms;~~
 R^3 is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;
 R^4 is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;
 R^5 is hydrogen or an organic radical having from 1 to 40 carbon atoms;
 R^6 is hydrogen; ~~or an organic radical having from 1 to 40 carbon atoms;~~
 R^7, R^8 are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms or R^7 and R^8 together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and ~~may also contain~~ optionally contains heteroatoms selected from the group consisting of the elements Si, Ge, N, P, O, S, Se and Te;
and

A is a bridge consisting of a divalent atom or a divalent group;

and wherein

if R^3 is hydrogen, then R^5 is an organic radical which has from 3 to 20 carbon atoms and is branched in the α position ~~and R^6 is hydrogen.~~

2. (currently amended) ~~An~~ The organometallic transition metal compound of the formula (I) as claimed in claim 1 in which

R^2 — is hydrogen;

R^5 is an organic radical which has from 3 to 20 carbon atoms and is branched in the α position; and

R^6 — is hydrogen;

R^1 and R^5 are different ~~and~~

~~— $M^1, X, n, Z, R^1, R^3, R^4, R^7, R^8$ and A are as defined for the formula (I).~~

3. (currently amended) ~~An~~ The organometallic transition metal compound of the formula (I)

as claimed in claim 1 ~~or 2~~

in which

~~R², R⁶ are each hydrogen,~~

R³ is a substituted or unsubstituted C₆-C₄₀-aryl radical or C₂-C₄₀-heteroaromatic radical containing at least one heteroatom selected from the group consisting of O, N, S and P, or R³ is a C₁-C₄₀-alkyl radical;_i

R⁴ is hydrogen, fluorine, C₁-C₁₀-alkyl, a substituted or unsubstituted C₆-C₄₀-aryl radical, or C₂-C₄₀-heteroaromatic radical containing at least one heteroatom selected from the group consisting of O, N, S and P;_i and

R⁷, R⁸ together form a divalent organic group T having from 1 to 40 carbon atoms, where T together with the two carbon atoms of the cyclopentadienyl ring forms a saturated or unsaturated, substituted or unsubstituted ring system which has a ring size of from 5 to 7 atoms, where T within the ring system fused to the cyclopentadienyl ring ~~may also contain one or more, identical or different heteroatoms~~ optionally contains at least one heteroatom, identical or different, selected from the group consisting of Si, Ge, N, P, O, S, Se and Te;

~~— and~~

~~— M¹, X, n, R¹, R⁵, Z and A are as defined for the formula (I).~~

4. (currently amended) ~~An~~ The organometallic transition metal compound of the formula (I) as claimed in ~~any of claims 1 to 3~~ claim 1

in which

M¹ is Ti, Zr or Hf;_i

n is 2;_i

R¹ is hydrogen or an organic radical which has from 1 to 20 carbon atoms and is unbranched in the α position;_i

R³ is a substituted or unsubstituted C₆-C₄₀-aryl radical;_i and

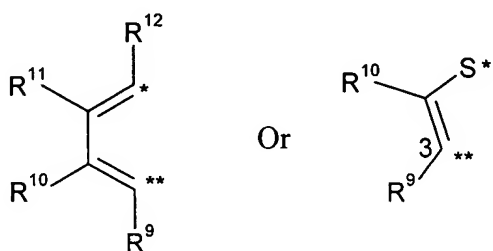
R^5 is an organic radical which has from 3 to 20 carbon atoms and is branched in the α position

~~and the other variables and indices are as defined for the formula (I).~~

5. (currently amended) ~~A~~The organometallic transition metal compound of the formula (I) as claimed in ~~any of claims 1 to 4~~claim 1

in which

R^7, R^8 together form



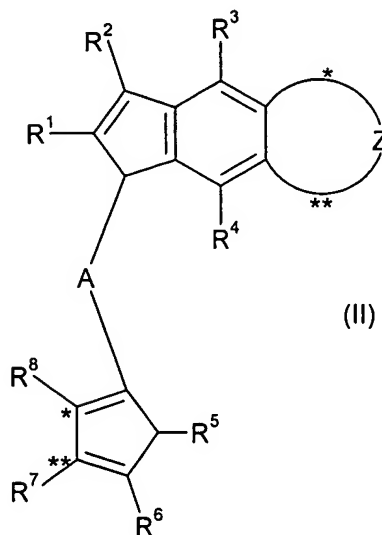
where

R^9, R^{10}, R^{11} and R^{12} are identical or different and are each hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms or two adjacent radicals R^9, R^{10} and/or R^{11} together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and ~~may also contain~~optionally contains heteroatoms selected from the group consisting of the elements Si, Ge, N, P, O, S, Se and Te;₁ and

A is a substituted silylene group or a substituted or unsubstituted ethylene group;
~~and~~

~~the other variables and indices are as defined for the formula (I).~~

6. (currently amended) A biscyclopentadienyl ligand system of the formula (II):



or its double bond isomers,

~~where the variables $R^1, R^2, R^3, R^4, R^5, R^6, R^7, R^8, Z$ and A are as defined for the formula (I)~~ wherein

Z is a divalent organic group which has from 1 to 40 carbon atoms and together with the two carbon atoms of the indenyl system forms a saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 4 to 12 atoms, where Z within the ring system fused to the indenyl system optionally contains at least one heteroatom, identical or different, selected from the group consisting of Si, Ge, N, P, O, S, Se and Te;

R^1 is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R^2 is hydrogen;

R^3 is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

R^4 is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

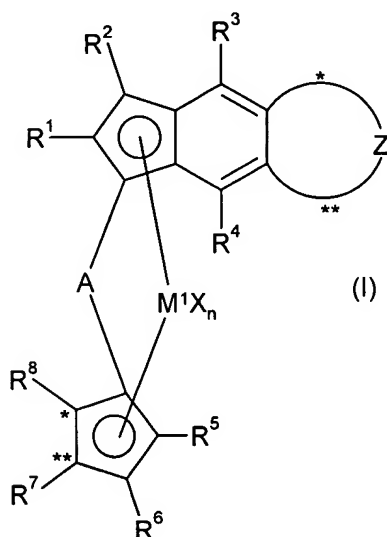
R^5 is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R^6 is hydrogen;

R^7, R^8 are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms or R^7 and R^8 together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and optionally contains heteroatoms selected from the group consisting of the elements Si, Ge, N, P, O, S, Se and Te;

A is a bridge consisting of a divalent atom or a divalent group;
and wherein if R^3 is hydrogen, then R^5 is an organic radical which has from 3 to 20 carbon atoms and is branched in the α position.

7. (currently amended) A catalyst system for the polymerization of olefins, which comprises at least one organometallic transition metal compound as ~~claimed in any of~~ claims 1 to 5 of the formula (I):



where

M^1 is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides,

the radicals X are identical or different and are each an organic or inorganic radical, with two radicals X also being able to be joined to one another;

n is a natural number from 1 to 4;

Z is a divalent organic group which has from 1 to 40 carbon atoms and together with the two carbon atoms of the indenyl system forms a saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 4 to 12 atoms, where Z within the ring system fused to the indenyl system optionally contains at least one heteroatom, identical or different, selected from the group consisting of Si, Ge, N, P, O, S, Se and Te;

R¹ is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R² is hydrogen;

R³ is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

R⁴ is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

R⁵ is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R⁶ is hydrogen;

R⁷, R⁸ are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms or R⁷ and R⁸ together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and optionally contains heteroatoms selected from the group consisting of the elements Si, Ge, N, P, O, S, Se and Te;

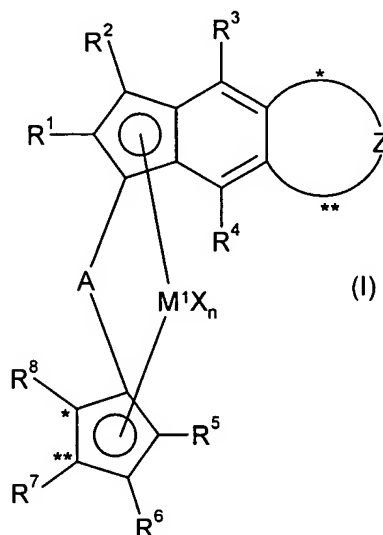
A is a bridge consisting of a divalent atom or a divalent group;

and wherein

if R³ is hydrogen, then R⁵ is an organic radical which has from 3 to 20 carbon atoms and is branched in the α position;

and at least one cocatalyst which ~~is able to convert~~ converts the at least one organometallic transition metal compound into a species which is polymerization-active toward at least one olefin.

8. (currently amended) ~~A~~The catalyst system as claimed in claim 7 which further comprises a support.
9. (currently amended) A process ~~for preparing polyolefins by polymerization or copolymerization of~~comprising polymerizing or copolymerizing at least one olefin in the presence of a catalyst system ~~as claimed in claim 7 or 8~~comprising an organometallic transition metal compound of the formula (I):



where

M¹ is an element of group 3, 4, 5 or 6 of the Periodic Table of the Elements or the lanthanides,

the radicals X are identical or different and are each an organic or inorganic radical, with two radicals X also being able to be joined to one another;

n is a natural number from 1 to 4;

Z is a divalent organic group which has from 1 to 40 carbon atoms and together with the two carbon atoms of the indenyl system forms a saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 4 to 12 atoms, where Z within the ring system fused to the indenyl system optionally contains at least one heteroatom, identical or different, selected from the group consisting of Si, Ge, N, P, O, S, Se and Te;

R¹ is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R² is hydrogen;

R³ is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

R⁴ is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

R⁵ is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R⁶ is hydrogen;

R⁷, R⁸ are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms or R⁷ and R⁸ together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and optionally contains heteroatoms selected from the group consisting of the elements Si, Ge, N, P, O, S, Se and Te;

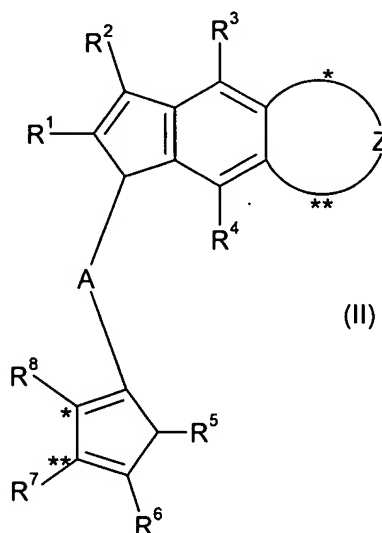
A is a bridge consisting of a divalent atom or a divalent group;

and wherein if R³ is hydrogen, then R⁵ is an organic radical which has from 3 to 20 carbon atoms and is branched in the α position;

and at least one cocatalyst which converts the at least one organometallic transition metal compound into a species which is polymerization-active toward at least one olefin.

10. (cancelled)

11. (currently amended) A process for preparing an organometallic transition metal compound, which comprises reacting a biscyclopentadienyl ligand system ~~as claimed in claim 6~~ of the formula (II):



or its double bond isomers,

wherein

Z is a divalent organic group which has from 1 to 40 carbon atoms and together with the two carbon atoms of the indenyl system forms a saturated or unsaturated, substituted or unsubstituted ring system having a ring size of from 4 to 12 atoms, where Z within the ring system fused to the indenyl system optionally contains at least one heteroatom, identical or different, selected from the group consisting of Si, Ge, N, P, O, S, Se and Te;

R¹ is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R² is hydrogen;

R³ is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

R⁴ is hydrogen, halogen or an organic radical having from 1 to 40 carbon atoms;

R⁵ is hydrogen or an organic radical having from 1 to 40 carbon atoms;

R⁶ is hydrogen;

R⁷, R⁸ are identical or different and are each hydrogen or an organic radical having from 1 to 40 carbon atoms or R⁷ and R⁸ together with the atoms connecting them form a monocyclic or polycyclic, substituted or unsubstituted ring system which has from 1 to 40 carbon atoms and optionally contains heteroatoms selected from the group consisting of the elements Si, Ge, N, P, O, S, Se and Te;

A is a bridge consisting of a divalent atom or a divalent group,

or a bisanion prepared therefrom with a transition metal compound.